PS36.

Abdominal Aortic Bifurcation Anatomy and Endograft Limbs Size Affect the Use of Adjunctive Iliac Stenting during Endovascular Abdominal Aortic Aneurysm Repair

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Objectives: Post-angioplasty residual stenosis >50% (PRS) of iliac endograft limb after endovascular abdominal aneurysm repair (EVAR) is an indication for intraoperative adjunctive stenting. The aim of the study is to determinate if abdominal aortic bifurcation diameter (AB), ratio of sum of iliac limb diameters to aortic bifurcation diameter (IL/AB) and aortic bifurcation calcification influence the PRS.

Methods: Post-angioplasty residual stenosis >50% (PRS) of iliac endograft limb after endovascular abdominal aneurysm repair (EVAR) is an indication for intraoperative adjunctive stenting. The aim of the study is to determinate if abdominal aortic bifurcation diameter (AB), ratio of sum of iliac limb diameters to aortic bifurcation diameter (IL/AB) and aortic bifurcation calcification influence the PRS.

Results: Two hundred forty-seven patients (233 men; mean age 74 ± 7 years) with 494 endograft limbs were evaluated. Mean AB was 28.9 mm ± 12.9 mm. Median endograft iliac leg diameter was 16 mm. AB was ≤ 20 mm in 70 patients(28%), IL/AB was >1.4 in 35%, AB ≤20 mm associated with IL/AB >1.4 in 22% and aortic bifurcation calcification ≥25% in 61% of patients. Thirty-six (15%) aortic bifurcations developed PRS and were treated with adjunctive stenting. In this group, AB was ≤ 20 mm in 42%, IL/AB >1.4 in 56%, AB ≤ 20 mm associated with IL/AB >1.4 in 36% and aortic bifurcation calcification ≥25% in 67% of patients. The mean follow up was 36 months (range 6-65 months).Multivariate analysis identified AB ≤20 mm, IL/AB >1.4 and IL/AB >1.4 associated with calcification ≥ 25% as predictive factors for PRS (P=.05, P=.007 and P=.015 respectively). Technical success and mid-term (36 months) clinical success were 100%.

Conclusions: PRS of iliac endograft is a common pattern in the EVAR. AB ≤20 mm, ILs/AB >1.4 and aortic bifurcation calcification ≥25% associated with ILs/AB >1.4 are statistically correlated with PRS. Adjunctive stenting is a safe procedure and ensures patency in patients with PRS.

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C9c: Poster Session - Cerebrovascular including Great Vessels (1)

PS38.

Increased Rate of Myocardial Infarction with Carotid Endarterectomy Under General Anesthesia: A Population-Based Study

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Objectives: To determine if the incidence of stroke, myocardial infarction (MI) or death differs in patients undergoing carotid endarterectomy (CEA) under general (GA) versus locoregional (LRA) anesthesia.

Methods: 33,291 patients who underwent CEA were identified from the National Surgical Quality Improvement Program (NSQIP, 2005-2010). The association between type of anesthesia (GA vs LRA) and incidence of perioperative stroke, MI and death was evaluated.

Results: 27,844 (83.63%) patients received GA, and were more likely than those who received LRA to have symptomatic carotid disease (43.9 vs 40.5%, P <.0001). No difference in baseline cardiovascular comorbidities was seen between groups (42.2 vs 41.2%, P = .63). In the overall cohort, 1.51% patients had a stroke, 0.66% had an MI, and 0.60% died within 30 days of surgery. In both the overall cohort and subgroup analyses, the perioperative MI rate was higher in patients who underwent GA compared to LRA (Table). In multivariate models adjusted for patient demographic and clinical characteristics, GA patients were 2.2 times more likely to have an MI compared to those receiving LRA (OR = 2.20, 95% CI = 1.36-3.58). No differences between groups were found in the incidence of perioperative stroke or death.

Conclusions: The CREST trial found a decreased rate of perioperative stroke in patients undergoing CEA compared to carotid stenting, but CEA patients had a higher rate of MI. Our finding of a reduced rate of MI in patients undergoing CEA with LRA compared to GA suggests that CEA using LRA may be the safest procedure for patients with carotid artery disease.

Table. Unadjusted myocardial infarction rates.

Subgroups	*General (N = 27,844)*	*Locoregional (N = 5447)*	P *value*
Overall cohort	0.73%	0.33%	.001
Symptomatic carotid disease	0.83%	0.32%	.01
Asymptomatic carotid disease	0.65%	0.34%	.03
With cardiovascular comorbidities[a]	0.93%	0.44%	.01
No cardiovascular comorbidities	0.58%	0.25%	.02

[a]CHF, MI w/in 6m, angina w/in 1m, PCI, cardiac surgery or PVD

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PS40.

Asymptomatic 50-75% Internal Carotid Artery Stenosis in 288 patients: Risk Factors for Disease Progression and Ipsilateral Neurological Symptoms

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Objectives: This study identified characteristics of patients with moderate internal carotid artery stenosis that are at increased risk for disease progression.

Methods: Patients with asymptomatic moderate internal carotid disease (peak systolic velocity [PSV] >125cm/sec and end diastolic velocity [EDV] <125cm/sec by duplex ultrasonography) correlating to 50-75% diameter reduction were followed for 3 years. Progression to greater than 75% diameter reduction (EDV > 125cm/sec) or presentation with focal neurological symptoms (stroke, amaurosis fugax, transient ischemic attack [TIA]) was documented. Co-morbidities, smoking status and medications were recorded. Log-rank testing, Wilcoxson models, and Kaplan-Meier plots provided statistical analysis.

Results: During 3 year follow up, 26 (9%) of 288 patients (137 men, 151 women) developed symptoms [stroke: 9 (3.1%), TIA: 3 (1%), amaurosis fugax: 3 (1%)] or asymptomatic increase in diameter to >75% [11 (3.8%)]. All-cause mortality was 11% (33 patients). 17 patients (5.9%) underwent carotid endarterectomy and 5 (1.7%) had carotid stent placement. The event incidence was significantly higher for men (P=.02), but survival was not different. The rate of disease progression and/or development of symptoms was 5.5% at 12 months and increased to 7.2% by 24 months. Co-morbidities with the highest associated event incidences were coronary artery disease [CAD] (8.1%), hyperlipidemia (7.3%), and hypertension [HTN] (6.7%). Medications associated with lower event incidences were insulin (2.8%) and angiotensin receptor blockers (1.9%).

Conclusions: 9% of patients with asymptomatic moderate carotid stenosis progressed to severe stenosis or developed ipsilateral neurological symptoms at three year follow-up. The rate of asymptomatic disease progression or symptom development was to 7.2% by 24 months. Male patients with CAD, hyperlipidemia, and HTN are at increased risk and are candidates for frequent screening and/or early intervention.

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PS42.

The Value of Near Infrared Spectroscopy and Transcranial Doppler to Predict the Onset of Cerebral Hyperperfusion Syndrome after Carotid Endarterectomy

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Objectives: Cerebral hyperperfusion syndrome (CHS) after carotid endarterectomy (CEA) is a potential life-threatening complication. Therefore, early identification and treatment of patients at risk is essential. CHS can be predicted by a doubling of post-operative transcranial Doppler (TCD) derived middle cerebral artery blood velocity (V) as compared to pre-operative values. However, in 15% of CEA patients an adequate TCD-signal cannot be obtained due to an insufficient temporal bone window. Near infrared spectroscopy (NIRS), estimating the frontal lobe oxygenation (rSO2) could be used as an alternative cerebral monitoring technique. We assessed the value of NIRS and peri-operative TCD to predict CHS after CEA.

Methods: In total, 151 consecutive patients undergoing CEA under general anesthesia having a sufficient TCD window were prospectively included. V and rSO2 measured before induction of anesthesia were compared to measurements in the first postoperative hour (ΔV, ΔrSO2 respectively). Logistic regression analysis was performed to determine the relationship between ΔV and ΔrSO2 and the occurrence of CHS. ROC curve analysis was used to determine the optimal cut-off values.

Results: Seven patients developed CHS. ΔV and ΔrSO2 differed between CHS and non-CHS patients (mean$\pm$SD), i.e. 63$\pm$29% vs 24$\pm$45% and 9$\pm$6% vs 1$\pm$9% respectively (P <.05). Increases in ΔV and ΔrSO2 were significantly associated with the occurrence of CHS, independent of age and gender, OR 1.47 (95% CI 1.04-2.09) per 30% increase in V and OR 1.77 (1.06-2.96) per 5% increase in rSO2. ROC curve analysis showed an AUC of 0.843 for ΔV and an optimal cut-off value of 62% increase (PPV 0.31, NPV 0.98). And an AUC of 0.793 for ΔrSO2 and an optimal cut-off value of 3% rSO2 increase (PPV 0.10, NPV 0.99).

Conclusions: Both TCD and NIRS seem to be useful to safely exclude patients from being at risk to develop CHS. However, due to the limited number of CHS cases our results need to be validated in a larger study.

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